

REMARKS

Applicants have read and considered the Office Action dated April 9, 2003 and the references cited therein. Claims 1, 2, 7, 9, 14, 39 and 40 are amended, while claims 8 and 10-13 are canceled. Claims 1, 2, 7, 9, 14 and 39-43 remain pending in this application.

Objection to the Specification

The specification was objected to as pages 51-53 sets forth a list of references. The list of references has been deleted. Applicants will submit the references in an Information Disclosure Statement.

Claim Rejections Under 35 U.S.C. § 112

Claims 39 and 40 are rejected under 35 U.S.C. § 112, first paragraph. Applicants assert that the rejection is traversed. Claims 39 and 40 have been amended to eliminate language regarding equivalents. Applicants assert that the claims overcome the rejection.

Claims 1, 2, 7-14, 39 and 40 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 8 and 10-13 are canceled. Claims 1, 2, 7, 9, 14, 39 and 40 have been amended to remove the indefiniteness. Applicants assert that the rejection is traversed.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 2, 7-14, 39 and 40 are rejected under 102(e) as anticipated by or alternatively under 103(a) as obvious over Bell et al.

Applicants assert that the rejection is traversed. Bell et al. discloses a biopolymeric "foam," while the present application recites a "sponge." Applicants assert that a foam is not a sponge. In column 1 of Bell et al., it is stated that sponges, such as collagen, gelatin or polyvinyl sponges have numerous deficiencies, and induce little regeneration in vivo and serve poorly as histotypic and organotypic models in vitro. This is the reason for the development of "foams" over sponges.

Bell et al., teaches that foams differ from sponges. According to Bell et al., the pore size is defined by x, y and z, which are substantially equal. This means that the pores of the foams are substantially cubical. In contrast, in a sponge, the pores are spherical, and are defined, as in the present application, by their diameter, see, e.g. page 9 of the present application.

Due to the stated differences between foams and sponges and different uses, Bell et al. teaches away from the present invention, because as mentioned above, the reference clearly describes sponges as unsuitable for the intended uses. Therefore, it would not be obvious to one of ordinary skill in the art to utilize a sponge in place of a foam.

Furthermore, Bell et al. uses biopolymer fibers and fabrics. This is why Bell et al. only mentions alginic acid and not alginates, which are the soluble salt derivatives of the polymer. Therefore, even the reference to alginic acid is not relevant to the alginates of the present invention, which uses soluble alginates in the preparation of the claimed sponges.

Moreover, as the Examiner correctly noted, Bell et al. provide no details of the Young's E-modulus of their foams. This is an important feature of the presently claimed sponges, and is not taught by Bell et al.

In addition, Bell et al. shows a composite biopolymer foam, which means that at least 2 biopolymers should compose the foam. These 2 biopolymers should be different in at least their polymer molecular weight (MW) and chemical composition. Moreover, the foams comprise extracellular matrix particulates, and the ability of the foam for in vitro cell culturing depends on the presence of these extracellular matrix (ECM) particulates. As can be seen from Table 2 and the accompanying description (Bell et al., col. 16), the culture was effective only when extracellular matrix particulate was added, as compared to controls without the ECM particulates.

The alginate sponge of the present invention stands on its own. As seen in Example 15 of the present application, high levels of albumin secretion, indicative of hepatocyte activity, were

achieved when hepatocytes were seeded in an alginate sponge (and the medium was devoid of serum).

In summary, Bell et al. does not anticipate the present invention because of the many above-described differences. Neither does Bell et al. render the invention obvious, because it teaches away from the use of sponges in general, and does not mention alginate sponges in particular, and, moreover, the sponges of the invention are shown to be advantageous over the foams of Bell et al. in terms of efficiency of in vitro cell cultures.


Therefore, it is respectfully submitted that Bell et al. or any other prior art neither teach nor suggest the present invention.

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: 10/9/03



Gregory A. Sebald
Reg. No. 33,280
GAS:PSTdb

23552

PATENT TRADEMARK OFFICE